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Claims

[c1] A cooling system for an imaging system comprising:
a mounting plate comprising a first side and an opposing second side, said mounting plate further defining at least one opening;
at least one heat conductor extending through said at least one opening and through at least a portion of a dielectric fluid reservoir defined adjacent said second side of said mounting plate and adapted to enclose an X-Ray source; and
a heat sink coupled to said first side of said mounting plate, said heat sink receiving at least a portion of said at least one heat conductor.

[c2] The system of claim 1, wherein said at least one heat conductor comprises a polygonal, semi-circular, or irregular cross-section.

[c3] The system of claim 1 further comprising a second heat conductor spaced apart from said first heat conductor and extending through a second opening defined in said mounting plate.

[c4] The system of claim 1 further comprising a plurality of

spaced apart openings in said mounting plate arranged in an arc.

[c5] The system of claim 4, further comprising a plurality of heat pipes extending through said plurality of spaced apart openings.

[c6] The system of claim 1, wherein said heat sink comprises at least one of
a plurality of thermally conductive fins coupled to said first side of said mounting plate and arranged parallel thereto, said plurality of thermally conductive fins receiving at least a portion of said at least one heat conductor,
a plurality of thermally conductive blocks coupled to said first side of said mounting plate, or
a solid thermally conductive block coupled to said first side of said mounting plate.

[c7] The system of claim 1 further comprising a thermally conductive sleeve coupled to said at least one heat conductor, said thermally conductive sleeve at least partially surrounding said X-Ray source.

[c8] The system of claim 7, wherein said thermally conductive sleeve further defines at least one groove, wherein said at least one heat conductor is coupled to said thermally

conductive sleeve at a surface of said groove.

[c9] The system of claim 8 further comprising an X-Ray shield enclosing said thermally conductive sleeve and arranged trans-axially thereto.

[c10] The system of claim 9, wherein said X-Ray shield comprises a first end and a second end, said first end defining at least one opening receiving said at least one heat conductor, said first end spaced a distance from said second side of said mounting plate, said first end coupled to said thermally conductive sleeve such that said thermally conductive sleeve extends a portion of a distance between said first end and said second end, said second end defining an opening for X-Rays from said X-Ray source to exit.

[c11] The system of claim 10, wherein said first end further comprises at least one projection extending along a portion of a length of said heat conductor such that said projection limits incident X-Rays from exiting said X-Ray shield.

[c12] The system of claim 9, wherein said thermally conductive sleeve comprises at least one of a general arc-shape, a general polygonal-shape, or an irregular shape.

[c13] The system of claim 1 further comprising a second X-

Ray shield coupled to said heat sink.

[c14] The system of claim 1, wherein said dielectric fluid comprises at least one of petroleum or silicone.

[c15] A cooling system for an imaging system including an X-Ray source contacting dielectric oil comprising:
a mounting plate comprising a first side and an opposing second side, wherein only said second side contacts the dielectric oil, said mounting plate further defining a plurality of openings spaced apart from each other;
a plurality of heat pipes extending through said plurality of openings, whereby said plurality of heat pipes contact the dielectric oil;
a plurality of thermally conductive fins coupled to said first side of said mounting plate, said plurality of thermally conductive fins receiving at least a portion of each of said plurality of heat pipes; and
an X-Ray shield within the dielectric oil surrounding the X-Ray source, said X-Ray shield comprising a first end and a second end, said first end defining a plurality of openings receiving said plurality of heat pipes, said first end spaced a distance from said second side of said mounting plate, said second end defining an opening for X-Rays from the X-Ray source to exit.

[c16] The system of claim 15 further comprising a generally

arc-shaped thermally conductive sleeve comprising an interior and an exterior coupled to said plurality of heat pipes such that said plurality of heat pipes are arranged lengthwise on a surface of said interior, said generally arc-shaped thermally conductive sleeve at least partially surrounding the X-Ray source.

[c17] The system of claim 15, wherein said X-Ray shield encloses said generally arc-shaped thermally conductive sleeve and is arranged trans-axially thereto.

[c18] The system of claim 15, wherein said first end of said X-Ray shield is coupled to said generally arc-shaped thermally conductive sleeve such that said generally arc-shaped thermally conductive sleeve extends a portion of a distance between said first end and said second end of said X-Ray shield.

[c19] The system of claim 15, wherein said mounting plate defines said plurality of openings spaced apart from each other in an arc arrangement.

[c20] A cooling system for an imaging system including an X-Ray source comprising:
a housing for the imaging system defining a dielectric oil reservoir enclosing the X-ray source;
a mounting plate coupled to said housing, said mounting

plate comprising a first side and an opposing second side such that said second side defines a boundary of said dielectric oil reservoir, said mounting plate further defining a plurality of openings spaced apart from each other in an arc formation;

a plurality of heat pipes extending through said plurality of openings, whereby said plurality of heat pipes contact the dielectric oil;

a plurality of thermally conductive fins coupled to said first side of said mounting plate and arranged parallel thereto, said plurality of thermally conductive fins receiving at least a portion of each of said plurality of heat pipes;

a generally arc-shaped thermally conductive sleeve comprising an interior and an exterior, said arc-shaped thermally conductive sleeve coupled to said plurality of heat pipes such that said plurality of heat pipes are arranged lengthwise on a surface of said interior, said generally arc-shaped thermally conductive sleeve enclosed within said housing and at least partially surrounding the X-Ray source; and

an X-Ray shield enclosing said generally arc-shaped thermally conductive sleeve and arranged trans-axially thereto within said housing, said X-Ray shield comprising a first end and a second end, said first end defining a plurality of openings receiving said plurality of heat

pipes, said first end spaced a distance from said second side of said mounting plate, said first end coupled to said generally arc-shaped thermally conductive sleeve such that said generally arc-shaped thermally conductive sleeve extends a portion of a distance between said first end and said second end, said second end defining an opening for X-Rays from the X-Ray source to exit said X-Ray shield.